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ABSTRACT

The three papers in this collection on library statistics were presented at the 1984 IFLA general conference. In "The Management Use of Library Statistics," Geoffrey G. Allen of the Western Australian Institute of Technology discusses current uses and misuses of library statistics and illustrates some practical applications of statistics by citing real library management situations. A second paper by Allen, "The Compilation of Library Statistics: Some Problems in Definition and Collection," exemplifies, from recent experiences in Australia, the practical problems that beset the compiler of statistical data on library operations. The third paper, "Definition and Collection of Library Statistical Data: The Nigerian Experience," by J. A. Dosunmu (Nigeria), summarizes efforts by the National Library of Nigeria to collect statistical data and evolve a national system for its collection, control, and standardization. Definitions and notes, recommendations, and a questionnaire used in this effort are appended. (THC)

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THE MANAGEMENT USE OF LIBRARY STATISTICS

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Geoffrey G Allen
Principal Librarian
Western Australian Institute of Technology

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I must establish from the outset that I am not a statistician, not even an amateur statistician. My basic education involved some concentration on science and mathematics, but for the past forty years I have made no formal effort to study, let alone practise, in these areas. Therefore, I speak here as a manager only, a library manager, but as one who has over recent years become increasingly involved with the collection of library statistical information, and perhaps in consequence is concerned with how these statistics are used or misused by librarians and others, and now they might be put to better use.

My credentials for speaking on the subject of management use of statistics are therefore based not on my statistical expertise but on my experience as a library manager and on my involvement over a number of years in the collection of statistics on Australian libraries. The latter involvement has embraced firstly the establishment of a machine readable statistical data base for Australian College and University libraries, to which has been added data for the New Zealand universities. This is an ongoing and still developing project that dates back originally to the 1950's, but which was taken up and computerised through the efforts of one of my staff at the Western Australian Institute of Technology during the late 1970's. Later this year I hope that we shall be publishing a guide to this data base (which goes under the acronym ANZALDATA) together with a respective volume of statistical tables and a magnetic tape of the available machine readable data (1). I have also more recently been a member of a task force commissioned to conduct the second "Census of Australian Libraries", the results of which have recently been reported to the commissioning body, the AustralianAdvisory Council onBibliographical Services. Lastly, my staff and I are also actively involved in a number of research programmes that involve the gathering of quantities of numerical data, which inevitably requires some form of statistical treatment before any sort of intelligible interpretation can be made.

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TO THE EDUCATIONAL RESOURCES

It may be something of a platitude, especially in this gathering, to point out that there are two meanings of the term statistics. However, anyone who has had occasion to monitor the classification of statistical publications should be aware that confusion does arise, even in the catalogues of the Library of Congress and the British Library. While there is of course a very real distinction between the demographic type of statistics that Dewey classifies at 312 and the mathematical statistical procedures that are properly shelved at 519.5, there is also a necessary relationship. As M.J. Moroney (2) has expressed it, "Wherever anything is measured numerically, wherever there is an attempt, however rough, to assess anything in the form of numbers, even by the simple process of counting, then there begins to arise the necessity for making judgements as to the significance of the data and the necessity for traffic rules by which the flow of information may proceed smoothly and purposefully."

This statement seems to me to be a profound perception of the gropings towards the enlightenment that librarians have long been indulging in through the collection and compilation of statistical data on library operations. We, the librarians, have perceived that there should be relevant relationships between the numerical measurements of certain aspects of library activity and the managerial decisions that we have to make. And so we have embarked upon the basic arithmetic process of counting, perhaps to the point of obsession.

Two further quotes from Moroney (2) exemplify the condition in which I fear too many librarians exist, and are even content. Thus he comments: "There is something very sad in the disparity between our passion for figures and our ability to make use of them once they are in our hands." No one surveying the annual reports of librarians and the national and international statistical returns concerning libraries could doubt our commitment to counting. But how often is there any valid analysis of the resulting figures, or the proposal of policy changes based upon changes in need demonstrated by the numerical data? Again, Moroney points the finger: "It is an easy and fatal step to think that the accuracy of our arithmetic is equivalent to the accuracy of our knowledge about the problem in hand;" and although he was generalising, surely he could have been describing librarians.

The first point therefore, that I want to make is that, by and large, librarians are great compilers of statistical data, but exhibit very poor

abilities in its interpretation, manipulation or use. Indeed, I would go further and say that much statistical information is grossly misused by librarians, innocently by the majority, but deliberately by that minority of us that has begun to acquire a modicum of statistical know-how. Such "little knowledge" may well prove dangerous, especially if the committees within which we operate adopt formal and rigorous managerial systems rather than the perhaps more traditional political models within which librarians have learned to compete with more or less success.

This peremptory condemnation of my peers relates, of course, to the managerial use of library statistics in the annual battle for resources. I recall that during the rather informal process of professional education that I obtained while in the employ of the State Library of NSW, I learned that during the late nineteenth and early twentieth centuries the libraries of the most eminent universities in the USA were encouraged by their presidents in an aggressive acquisitions competition. Sheer library collection size was portrayed as evidence of academic excellence and used by the universities in appeals to alumni for funds for general support of the institution. This race narrowed down to a two horse event between Yale and Harvard, from which the latter finally pulled away to an unbeatable lead, with the result that the gross library collection statistic ceased to have any magical meaning for university management.

But still, for the rest of us in the younger and, perhaps less fortunate institutions, statistics as a measurement of size are all too often used as a major argument for resources. Crudely, collections are compared with those of other libraries. With more subtlety, ratios of numbers of books to numbers of patrons, or similar relationships between resources and supposed demands, are compared between our library and others, always of course, the more fortunate.

Out of this passion for arithmetic we have, by the processes of addition and division, developed so-called standards. Of course the data to be summed has first been carefully selected to ensure that the consequent standard will considerably exceed the performance of any library to which it is intended to be applied. Nevertheless, we have then gaily gone ahead and compared our own particular libraries with this or that standard (fortunately there is usually a choice of standards) and, it must be admitted, often the process has produced the desired result of improved funding.

If this analysis seems cynical, I can only refer to our Australian experience.

In 198:, Brockman (3) enquired of Australian college librarians concerning the uses they made of the statistical data that is published annually in Australian Academic and Research Libraries. The most frequent purpose was that it was used to support annual budget submissions.

I am not suggesting that this rather basic, even mundane, use of statistical data is necessarily improper, although I have some reason to believe that the actual data used is often suspect in the matter of accuracy. Also, I suppose that, recognising the essentially political nature of the environment within which library managers of all kinds must operate, it is fair enough to leave it to the higher authorities to dispute the "facts" if they can. Nonetheless, in a profession that is strong on ethics in many of its activities, and even stronger on accuracy of detail in others, a somewhat cavalier attitude to statistical accuracy and validity should be at least an embarrassment.

Stubbs (4) has argued that the analysis of data such as that contained in the ACRL or ARL statistical files does no more than establish norms of performance that were evident in a group of libraries at a particular time. Thus, analysis does not "permit us to make the leap from what is to what should be", nor are the derived quantitative statements "standards in the sense of goals that most libraries should strive to achieve". His conclusion was that librarians "must look for and measure what is necessary to give users what they need when they need it".

This shift of emphasis to users and their needs is also promoted forcefully by Evans (5) who states categorically that "the standards are wrong, for the fundamental reason that they are input standards or measures and not output standards or targets. They do not establish performance goals nor measure their attainment. The important measure of a library's effectiveness is the number of requests for service it can satisfy while the users' need exists". Later in the same paper, while discussing the 1975 "national inventory of library needs" he makes the criticism that "the data are just not refined to the point where these kinds of projection can be made..... The danger however, is that the data will be uncritically accepted and used unwisely". Very similar doubts about the usefulness of statistical data on academic libraries were also expressed by Bently (6), who assessed the output of the U.S. National Center for Education Statistics in no uncertain terms. She wrote that "the NCES data have not supplied us with any information which can be used to truly evaluate the collections or determine whether the academi

libraries are useful or even fulfilling their objectives. Only the number of volumes and titles held per student show any statistically significant differences; while important for some purposes, these particular items do not reveal anything about the areas of individual and comparative performance which would be useful for evaluating and improving library performance. As the NCES statistics are now constituted, the time, effort and expense of gathering and disseminating the data are largely wasted".

These concerns about the relevance, even the validity, of the grandiose statistical compilations that are being put together annually in many parts of the world, must be noted. The cost to individual libraries for the recording of the discrete events that are the source of the statistics, and for the subsequent compilation of the annual returns, together with the subsequent cost of amalgamation of data from many libraries, is very considerable. If it indeed has no meaning, it is so much wasted effort. But if it is used to reach invalid conclusions it is worse than a waste, it is a menace to rational management.

The failure of library statistics to solve all the problems that library management would have them solve may not, however, be entirely the fault of the statistics, even allowing for some unwritten law of the perversity of inanimate systems. A number of questions may reasonably be asked. Do librarians collect the appropriate statistics? Are the statistics we collect either accurate or compatible among similar libraries? Do we ask valid questions of the data? And above all, do we know how to manipulate and interpret statistical information? All too often, I fear that the answer to these questions is "no", and that we are guilty of rushing in where real statisticians would at least tread cautiously.

Librarians have long assumed that because they can count, the consequential accumulation of numerous totals of a varied selection of items or activities must, in some mysterious way, lead to enlightenment. It is not too much of an overstatement to say that for many librarians "big is beautiful", that an empty stack is there to be filled, that books are there to be borrowed, and the more the merrier. It is assumed that readers who borrow are readers satisfied, but there is no necessary logic to this.

Apart from using the general compilations of library statistics in the political context of management, where there is more than an element of bluff, bluster or downright sleight of hand, these data have limited applications in the

management of the internal affairs of any particular library. Brockman (7), has recently applied econometric techniques to the Australian University and College library statistics and has reached a number of interesting conclusions. Thus he suggests that it might be possible, through a study of the substitutability of one category of library staff for another e.g. professionals for non-professionals, to improve the economic performance of a particular library. However, his model necessarily makes a number of assumptions and limits the number of variables so that it is hardly a vade mecum for library decision makers.

A more immediately profitable avenue may be found in the application of the limited data collected within a library to ongoing issues that require periodic decisions. For these internal matters it is of no consequence to know the total budget, the overall acquisitions rate, or the annual circulation figures of either one's own or of comparable or competing libraries. What is needed is a picture, in quite precise detail, of the library's operations over at least the past year and preferably over several recent years. Traditionally, librarians have either been unable to assemble such data, or have failed to realise the need. But with the advent of computerised systems of operation, the physical obstacles to the assembly and digestion of data based on unit operations has become entirely feasible. It remains only for librarians to revise their thinking on library statistics, to as it were, turn their eyes away from the far hills and concentrate on the more immediate happenings around them. It is important for library managers to specify precisely their management objectives and from these specifications to identify the statistical facts that they require their systems to assemble. In this some care is called for, as it is easy to be swamped by the raw data from computerised systems, and there is always the danger of in-built system errors perpetuating erroneous interpretations of events. As Paula Strain (8) has cautioned "consistency is essential. The entire library staff must understand what the manager is attempting in the collection of raw data and how it will be used; the terms on the reporting sheets must mean the same to each member of staff." And these principles of consistency and accuracy, in definition and recording, must be written in to automated systems as thoroughly as they must be drilled into staff. Unfortunately, it is hard to disagree with Evans (5) that "one of the pandemic afflications of libraries is failure to accept and agree upon statistical definitions".

Before turning to some illustrations of some practical application of

statistics to real library management situations, I would reassert the importance of measures of outputs compared with those of inputs, and point out that the problems of definition and accuracy are certainly not less for the output activities. It must be recognised that between libraries, or over time, there is often little consistency in the measurement of such basic inputs as collection size or staffing levels. Even budget figures are often suspect, and at the best require extensive corrections to overcome fluctuations in the values of monetary units through inflation, changes in exchange rates, and the independently varying costs of library materials. The nature of library outputs is such that there is almost bound to be considerable variation in the reliability of the statistics that purport to measure them. Brooks (9) has categorised circulation statistics compiled by automatic systems as highly reliable, whereas in-library use counts may be subject to considerable random error, and reference statistics are liable to suffer from the varying work pressures on the staff charged to keep the tally.

The objective of library management may be stated simply as the satisfaction of user needs. Although the identification and description of these needs has become a major preoccupation for many librarians, it is reasonable here to assume that, whatever they may be they are to be satisfied through the availability of library collections and the services of staff that make these collections accessible in an intelligent and systematic manner. It must then follow that for effective management the issues of paramount importance are the selection of the most potentially useful materials for addition to the collections and the most efficient deployment of the available resources of staff. I have referred above to a possible contribution of statistical analysis to the latter concern. I would now like to discuss the contribution of statistics to improvement in the management of collection development.

There are two distinct, periodic, activities that effectively determine the pattern, quality, and to some extent even the quantity, of collection growth. The most obvious are the processes used to select or identify the particular items that are to be added to the collection. At some point these processes can be equated with specific decisions by individuals, or small groups, which may be librarians, library patrons, or others considered to be in a position to know what the library should acquire. The qualifications of these selectors for this job are often not even considered, while their performance is rarely challenged. Yet every librarian knows that many books in their library are never or rarely used, while there is a regular demand from readers for books or journals that the library has failed to acquire.

Because book selection is inevitably a predictive activity, we can never expect to achieve perfection, but management should be striving to optimise the performance of this process. Towards this end, the comparative analysis of what is purchased, on whose recommendation, with the subsequent use, should enable the library to improve selection either by identifying categories of materials that have a relatively low chance of being used or by changing selection procedures that can be shown to generate purchases of materials that are subsequently little used; this latter response may mean no more than changing the selection librarian or ignoring the advice of library patrons or others whose past performance has led to ineffective purchases. To achieve these objectives, detailed statistics of the selection activities of individuals must be collected and maintained in a form that allows their periodic comparison with data on the use of books etc. Such analytical activities are easy enough to establish where there are automated acquisitions and circulation systems, provided it can be accepted that circulation data is an adequate indicator of total use. However, to achieve any significant improvement in selection through this approach, monitoring of the relevant activities must be continuous over a considerable period of time, and must in itself constitute a not inconsiderable charge against the library resources.

A number of methods have been assessed whereby the library manager can obtain an improved understanding of selection performance and can then act to direct resources into more potentially useful areas of acquisition. Byrd, Thomas and Hughes (10) have described a technique for the comparison of acquisitions and inter-library borrowing patterns by the subject of the materials. Where the patterns are similar it is deduced that acquisition performance is appropriate to user needs, but where there are significant discrepancies it is implied that the library is purchasing either too much or too little in the specific field, according to the direction of the disparity. A somewhat similar analytical method is reported by Del Frate (11) whereby circulation data was compared with the pattern of total holdings, the latter obviously being the accumulation of past acquisitions activities. Again it was possible to identify certain classes within the collection where use was rising and where relatively greater acquisitions effort seemed to be desirable.

An alternative to the control of collection development through the examination of specific acquisitions or of subject patterns, is to attack the problem through budgetary allocation. In practice these alternatives are not mutually incompatible. McGrath (12) has described a method of budget allocation to the academic areas of a university on the basis of past use of the collections

and the known unit costs of books previously purchased for these areas. In the face of a severe budget cut-back for 1984, this approach has been adopted, with some developments, at the W A Institute of Technology. Fortunately, our computerised circulation system generates an archive in which both the borrowers and the D C class numbers of books borrowed are identifiable. By reference to the Institute's student and staff record systems it has been possible to analyse the annual loans according to the departmental affiliations of staff and students, both separately and combined. From the data in the library's acquisitions archive it was also possible to calculate for each department, the average unit cost of titles purchased in the previous year and then by assuming an inflation factor in book prices, to hypothesise an average cost for the coming year. Similar analyses were also possible for loans and prices according to the D C classification.

McGrath developed his method for the allocation of funds to academic units, and this procedure was applied at WAIT. Unfortunately in retrospect, it transpired that the identification of student departmental affiliations from enrolment records produced, for a number of departments, some severe distortions. This was due to the fact that at WAIT each course is formally administered by a single academic department which the enrolment system then identifies as the department of student affiliation. However, some courses involve students in taking a significant proportion of their subject units in subjects actually offered by other departments. As a result, those departments for whom these "service" units are a major factor in their teaching, were seriously under credited with students and therefore with library use, while others which "farm out" their students, were correspondingly over valued. However, the distribution of budget on the basis of use of books by D C classification is immune from this distortion, and is therefore a more satisfactory basis for control on both theoretical and practical grounds.

The result of this budget exercise was a dramatic relative redistribution of acquisitions funding, which inevitably resulted in a number of faculty protests. Among these was the far from novel assertion that certain groups of students used library materials in the library but did not borrow. In an earlier paper McGrath (13) had demonstrated that for one American university library circulation use was a reasonable measure of total collection use. Despite the theoretical doubts expressed by Brooks (9) and the qualifications identified by Lancaster (14), McGrath's evidence is

at least a reasonable basis for a first hypothesis. However, before it can be accepted as a general law, or even a probability, the criticisms must be answered by further studies, and the basic premise tested in a considerable number of different library situations over a period of years.

The exercise conducted at WAIT did however produce some intrinsically interesting results that in themselves raise some questions about relationships within the data on library use. Thus the rankings of departments by the average number of loans per student or staff member in 1983 produced two very different orders (Table I), and a very significant range in the levels of activity. This use data, when expressed as a percentage of total use and combined with the average unit costs of titles, was applied to the 1984 budget and produced the significant redistribution of acquisitions power indicated in Table II. The exercise in relation to budgets by D C class is illustrated in the partial list in Table III, from which it was clear that the past analysis by subject maintained in the library's acquisition system was extremely uneven. There is absolutely no point in a level of analysis that could lead to a budget allocation of $10, for class 310-319, while other aggregations produce undifferentiated budgets of $10,000 or more, e.g. for class 300-301 + 308-309. From a practical day to day management point of view this analysis was certainly worth the effort.

An inevitable consequence of the severe acquisitions budget cut, down $100,000 in actual dollars from 1983 to 1984, was to find ourselves back in the arena of political debate in preparation for the battle for the 1985 budget. However, the analysis by subject, reported above, had brought home the profound effect that the differential costs of books in different subject areas must have on the purchasing capacity of a library. A comparison of global acquisitions budgets of academic libraries might be concealing very substantial differences in purchasing power, or in the relative abilities of libraries to meet user needs. An attempt has therefore been made for a select group of libraries to examine the impact of varying course and enrolment profiles together with varying book prices by subject on the theoretical acquisitions needs. The selected libraries deliberately included both University and Institute of Technology libraries, some large and some small, and one - the University of Newcastle, located outside a capital city.

Some adjustment was necessary to bring the enrolment data obtained from the Commonwealth Tertiary Education Commission (15, 16) to a common basis,

illustrating yet again the inadequacies that are inbuilt in so much national statistical data. Two hypotheses were then necessary. Firstly, it was decided to adopt the unit book costs by subject as calculated for WAIT Library acquisitions during 1983. Secondly, the assumption was made that books would be acquired evenly across the range of subject disciplines represented, and this was achieved by hypothesising an idealised acquisitions distribution of one book per student. From that data hypothetical notional acquisitions budgets were calculated, and for the sake of comparison, then reduced to unit expenditures. Both the total budgets and the average unit costs were then reduced to indices with bases equal to 100. For comparison a further index was calculated for actual 1983 acquisitions budgets, although it must be appreciated that the latter included expenditures on serials as well as on monographs. For all three indexes the same library, that of Murdoch University, is used as the base 100. These calculations are presented in Table IV.

The effect of the student subject profile is clear in the index of acquisitions costs per student where four of the Institutes of Technology stand out as having high cost library collection needs. At the other extreme is the W A College of Advanced Education, which is predominantly a teacher training institution. The hypothetical index of monograph budget needs reflects the subject profile, but inevitably is dominated by actual enrolment numbers. However, when this is compared with the index for actual acquisitions budgets, a very clear separation occurs between the universities and the colleges, but within these two groups some interesting anomalies emerge. Brockman (7) has revealed the biases that exist in the Australian tertiary educational system whereby the small university libraries are differentially favoured compared with those of the larger universities, while the poor relation status of the Colleges of Advanced Education has been built in since their establishment in 1967.

This essentially local Australian diversion was not intended to reveal any profound truth. Rather it may serve to illustrate how various data of different order and from several sources may be manipulated to assist in either the internal resource management of a single library, or to support a wider argument for a more objective and fairer distribution of resources between a number of competing libraries. At no point do these exercises resolve the issue of actual needs.

In case there is any suspicion that I believe that I have attained an understanding of the use of statistics to resolve practical library management issues, I find it appropriate to quote two seemingly opposing views

on the value of studies relating to the management of collection development . In a paper broadly extolling the value of the statistical data on library use quite widely available, Axford (17) wrote in 1981 that "research into collection use poses a serious challenge to the traditional wisdom regarding collection management which takes as a priori the proposition that there is a divine harmony between the collection needs articulated by the faculty and patterns of faculty behaviour with respect to collection use". I must echo these sentiments for, in my experience, which I see increasingly confirmed by the analyses that are becoming available to me, I perceive that academic library use is, quantitatively, essentially a result of student activity, and that the faculty are all too often inaccurate in their predictions concerning that activity.

Nevertheless, I cannot dismiss the argument put by Dudley (18) in reply to Axford, that "when you are out there, ahead of the scholars and the bibliographers, trying to anticipate what they will need for their scholarship and their bibliographies, you will make mistakes, and there will be unused books in your collection. We are supporting not only today's research but tomorrow's.....".

In reality both of these views are tenable, provided they are not pursued to excess. From Axford we should take the message that librarians must reserve their position in relation to the demands of users, however influential, and test requests against the variety of our own experience, using the advantages that rigorous analysis of past performance can provide. But there is still not only a place for, but an essential need for, an intuitive, imaginative selection process that encourages and requires the addition to stock of the contemporary creative masterpieces and the seminal works of scholarship whether or not there is any immediate demand, and indeed even in the face of the vocal phillistines or the prejudices of over zealous cost accountants.

As a concerned library manager, I recognise a need for accurate and relevant statistical information, the need to improve the range of such information as is currently available, and the need for the development of sophisticated but, to the librarian, intelligible means of analysis. At the same time I see the necessity to beware, lest statistical information become the sole acceptable criterion for decision making, and a tyranny that would destroy the essence of professional judgement. Library management is not a science, least of all an exact one, but an art whose practitioners would still be wise to avail themselves of the assistance that statistical methods can, at times, afford.

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TABLE I

AVERAGE NUMBER OF LOANS PER STUDENT AND STAFF MEMBER IN 1983 BY SCHOOL/DEPARTMENT IN RANK ORDER

Rank	Students: School/Dept	Students: No. Loans	Staff: School/Dept	Staff: No. Loans
1	Home & Consumer Studies	26.88	Muresk	61.04
2	Library & Inf. Studies	26.53	Management	25.50
3	Speech & Hearing Science	23.39	Library & Inf. Studies	24.38
4	Social Work	23.05	Therapy (combined)	22.71
5	Nursing	23.02	Physics & Geosciences	22.23
6	Art & Design	22.71	Social Work	21.24
7	Therapy (combined)	21.42	Social Sciences (inc. Asian Studies)	21.03
8	Muresk	20.32	Economics & Finance	19.59
9	Social Science (inc Asian Studies)	20.20	Psychology	19.15
10	Psychology	20.19	Pharmacy	19.00
11	Architecture & Planning	19.87	Community Health Science	17.81
12	Metallurgy	18.23	Speech & Hearing Science	17.50
13	Faculty of Education	17.80	Architecture & Planning	16.66
14	Community Health Science	16.85	Chemical Engineering	16.50
15	English	16.64	Applied Chemistry	16.41
16	Management	15.96	Civil Engineering	15.90
17	Biology	15.39	Metallurgy	15.80
18	Physics & Geosciences	14.96	Surveying & Mapping	15.75
19	Medical Technology	14.50	English	15.55
20	Economics & Finance	13.64	Art and Design	15.32
21	Business Law	13.29	Nursing	14.14
22	Civil Engineering	12.65	Home & Consumer Studies	14.00
23	Electrical Engineering	12.63	Computing & QS	13.64
24	Computing & QS	12.35	Biology	13.36
25	Pharmacy	11.89	Maths & Computing	12.53
26	Chemical Engineering	11.88	Medical Technology	12.21
27	Accounting	11.60	Education	12.14
28	Maths & Computing	11.30	Mechanical Engineering	10.27
29	Mechanical Engineering)	10.61	Accounting	9.39
30	Surveying & Mapping)		Electrical Engineering	7.84
31	Applied Chemistry	9.71	Business Law	6.88
	Overall average	17.32	Overall average	18.86

ABLE II DISTRIBUTION OF MONOGRAPH ACQUISITIONS FUNDS

	1983 Commitals			1984 Budget	
ool/Dept	$	%	Use %	$	%
itecture	4,073	1.7	4.6	6,650	4.4
& Design	9,375	4.0	4.6	7,720	5.2
lish	14,160	6.0	5.3	5,310	3.5
ial Science	19,982	8.5	7.4	6,730	4.5
ial Work	3,172	1.3	3.3	3,620	2.4
& Inf Studies	3,805	1.6	4.8	6,550	4.4
lty of Education	6,399	2.7	8.7	9,570	6.4
Art, Ed & Soc Sci	60,926	25.9	38.9	46,150	30.8
ied Chem	7,718	3.3	1.0	2,840	1.9
ogy	5,324	2.3	1.4	3,140	2.1
Eng	6,759	2.9	1.5	3,420	2.3
trical Eng	4,252	1.8	2.1	4,210	2.8
s	7,065	3.0	1.7	3,060	2.0
k	14,196	6.0	3.6	4,110	2.7
ics & Geosci	19,307	8.2	2.9	7,850	5.2
Eng	6,774	2.9	0.3	1,500	1.0
Eng	4,741	2.0	1.2	2,570	1.7
llurgy	1,438	0.6	0.5	1,270	0.8
eying	1,455	0.6	0.7	1,150	0.8
Eng and Science	79,029	33.6	16.8	35,120	23.4
unting	2,474	1.1	5.1	7,030	4.7
Law	4,415	1.9	1.0	1,900	1.3
& Quant Studies	9,480	4.0	3.4	5,420	3.6
&Finance	16,063	6.8	2.7	2,910	1.9
gement	4,699	2.0	5.0	7,090	4.7
Bus & Admin	37,131	15.8	17.2	24,350	16.2
& Cons Studies	1,714	0.7	1.2	2,080	1.4
ology	7,301	3.1	3.8	6,950	4.6
ch & Hearing	4,768	2.0	1.1	2,040	1.4
unity Health	6,504	2.8	4.2	6,730	4.5
Tech	15,590	6.6	1.9	6,110	4.1
ing	3,353	1.4	4.9	4,700	3.1
nacy	7,103	3.0	1.1	2,850	1.9
pies	11,822	5.0	9.0	12,920	8.6
Health Sciences	58,155	24.7	27.2	44,380	29.6
TOTAL	235,241	100	100	150,000	100

.84

DISTRIBUTION OF MONOGRAPH BUDGET OF $150,000
BY SUBJECT

1. Muresk Library (no subject breakdown) $ 4,160
2. Therapy " (" " ") $12,100

Acquisitions subject code	D.C. Classes	1983 use factor	1984 Estimated Unit price $	198 Budg Allocation $
001	001	2.6367	31.28	4331
020	020-029	1.7929	25.64	2415
070	070-079	0.2738	13.11	189
[illegible]	100-149, 160-199	0.9295	19.60	957
150	150-159	5.1423	26.46	8535
200	200-299	0.5797	9.08	277
300	300-301, 308-309	6.6823	30.72	10782
302	302-303	0.9219	20.01	969
304	304-305	0.6006	10.39	328
306	306-307	0.6884	11.73	425
310	310-319	0.0223	8.92	10
320	320-329	1.7253	18.85	1703
330	330, 334, 335-337, 339	2.8625	21.24	3199
331	331	1.3156	13.43	931
[illegible]	332	0.6020	20.43	648
333	333	0.5205	17.53	479
338	338	1.2528	9.31	613
340	340-349	2.7816	24.38	3562
350	350-359	0.4634	14.88	362
360	360-369	3.0715	14.64	2361
370	370	1.9044	14.66	1467
371	371	1.7099	13.27	1192
372	372	0.7930	13.16	568
373	373	0.0822	14.66	63
374	374-379	0.7581	14.66	584
380	380-389	0.5637	10.53	311
390	390-399	0.4202	30.72	677
400	400-499	0.6996	15.90	584
500	500-509	0.4209	44.69	983
510	510-519	1.9740	26.51	2749
520	520-529	0.7525	44.90	1775

AL ACQUISITIONS BUDGETS BASED ON
LES BY SUBJECT 1983

Business Economics	Arts & Humanities	Education	TOTALS	Overall ave cost of one book per student	A Overall cost per student as index (Murdoch = 100)	B Hypothetical relative needed book budget index (Murdoch = 100)	C 1983 Actual budget index (Murdoch = 100)
823.59	23.53	18.26		$			
1,082	3,853	1,187	8,489				
23,873	90,661	21,675	235,400	27.73	90	251	276
3,408	3,784	1,691	10,735				
80,220	89,038	30,878	279,272	26.02	84	298	197
3,826	3,944	1,407	14,235				
90,256	92,802	25,692	416,254	29.24	95	444	490
109	1,144	531	3,086				
2,571	26,918	9,696	93,844	30.89	100	100	100
1,040	1,074	279	4,278				
24,534	25,271	5,095	131,045	30.63	99	140	232
1,836	3,133	807	9,660				
43,311	73,719	14,736	284,694	29.47	95	303	314
3,318	478	0	8,488				
78,272	11,247	0	280,882	33.09	107	299	117
3,021	362	30	7,711				
71,265	8,518	548	244,863	31.76	103	261	157
3,108	798	61	11,267				
73,200	18,777	1,114	374,621	33.25	108	399	122
1,811	1,062	0	6,031				
42,721	24,989	0	193,578	32.10	104	206	95
1,234	488	6,176	8,699				
43,264	11,483	112,774	168,463	19.37	63	180	119
3,558	2,288	1,304	11,844				
83,933	53,837	23,811	347,064	29.30	95	370	159

TABLE IV COMPARISON OF HYPOTHETIC
STUDENT ENROLMENT PROF

E = Enrolment $ = £s At Cost	SUBJECT	Science	Architecture Building Surveying	Medical Sciences	Engineering & Technology	Fine Arts	Agriculture
	Ave Cost Books	$42.67	$40.52	$39.81	$38.63	$30.91	$24.63
Latrobe	E	2,188	0	0	4	0	265
	$	92,309	0	0	155	0	6,527
Macquarie	E	1,777	53	29	0	0	0
	$	75,824	2,148	1,154	0	0	0
Monash	E	2,672	0	1,119	1,267	0	0
	$	114,014	0	44,547	48,944	0	0
Murdoch	E	1,018	0	286	0	0	3
	$	43,438	0	11,147	0	0	74
Newcastle	E	671	126	320	768	0	0
	$	28,632	5,106	12,739	29,668	0	0
UNA	E	1,526	131	1,089	866	0	272
	$	64,114	5,308	43,353	33,454	0	6,699
NSWIT	E	2,204	638	0	1,850	0	0
	$	94,045	25,852	0	71,466	0	0
QIT	E	1,431	731	231	1,662	16	0
	$	61,018	29,620	9,196	64,203	495	0
RMIT	E	2,816	1,045	237	1,788	1,311	0
	$	120,159	42,343	9,435	69,070	40.523	0
SAIT	E	796	295	681	1,319	61	0
	$	33,965	11,953	27,111	50,953	1,886	0
WACAE	E	5	0	0	0	23	0
	$	213	0	0	0	711	0
WAIT	E	1,592	420	990	1,214	312	186
	$	67,931	17,018	39,412	46,897	9,644	4,581

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THE COMPILATION OF LIBRARY STATISTICS: SOME PROBLEMS IN DEFINITION AND COLLECTION

129-SEMSTAT 1-E

G. G. Allen
Principal Librarian
Western Australian Institute of Technology

The principal purpose of this paper is to exemplify, from recent experience in Australia, the practical problems that beset the compiler of statistical data on library operations. While I am sure that it is strictly unnecessary for the sake of completeness, or posterity, I would remind you of the characteristics of the Australian continent and community as they may affect the library statistician in his ambition.

Firstly then, Australia is a continent, and though it is the smallest of continents, distance is still a very real practical consideration. From east to West, that is from Sydney to Perth, is 3278 km, and from North to South, say from Darwin to Melbourne, is 3273 km, but I must further remind you that south of Melbourne is the island of Tasmania and that from Melbourne to Hobart, the capital of that state, is 610 kms. In a land of these dimensions one does not collect data by going personally from door to door.

Secondly, although Australia covers some 7.5 million square kilometres, it has a population of only about fourteen million people. Moreover, this population is very unevenly distributed. The largest city, Sydney, is a major centre of 3.5 millions, Melbourne is not much smaller with some 2.5 millions, and Brisbane, Adelaide and Perth are all of the order of one million. This does not leave that many people to fill the rest of the country, and overall, something like two thirds of the people live in cities or towns. The importance of this to the present discussion is of course that libraries are found in centres of population and not in sparsely populated rural areas. Consequently, the libraries of Australia are largely concentrated in a relatively small number of medium to large cities, which themselves are separated by considerable distances. There is a remainder of libraries scattered through the less populated parts of the continent, and although these account for a relatively minor part of the national library resources and activity, they pose a disproportionate problem for the collector of library statistics.

delivered
Thursday at the Paris Conference on Statistics

Although Australia is not only a single continent but also a single nation, and although in population terms a quite small nation at that, it must be recognised that it has an internal politico-geographical structure that has considerable significance in the matter of library statistics. I mean of course that Australia is a federal country, comprising six sovereign states plus the Northern Territory, which latter is assuming the status of a state in many respects. In matters of government there is a division of powers between the federal, Australian government with its seat in Canberra, and the seven state/territory governments. At the same time there is some overlapping between the bureaucracies of federal and state governments. Thus primary and secondary education are state preserves, but universities and colleges of advanced education are funded by the Commonwealth, with technical colleges falling in between. Again there are overlapping interests in such areas as health, law and agriculture, and both state and federal governments support special libraries with interests in these areas, and often there is apparent duplication within the one city. Public libraries are largely the concern of state governments, but here there are considerable differences between states, some having highly centralised systems and others leaving public libraries largely to local government. The consequence when it comes to collecting library statistics is that there is generally no simple pattern and no certainty of uniformity in response. But at least we all speak one language, if with a distinctive accent!

The language of mathematics has the appealing apparent characteristic of independence from the languages we variously speak. In that statistics involves the assembling of numerical data, it may therefore appear that this data is independent of the communication problem inherent in the interpretation of spoken languages. Nothing could be further from the truth. The value and comparability of statistical data are limited, even to the extent of rendering them useless, by the extent to which the verbal definitions used in their compilation are accurately interpreted or accepted. Where there is a need to express a statistical concept in different languages it is easy to understand how diverse interpretations may arise. It must also be accepted that even where librarians are conferring in a common language, they are not only capable of, but frequently do confuse the facts through inadequate definition of terms or inability to accept uniform interpretations.

This matter of definitions in the collection of statistics is crucial to the value of any programme of compilation. But before I address that in

more detail I must draw attention to an even more fundamental concern that I believe should be addressed before any statistical project for libraries is launched. This concern is simply, what are the objectives of librarians in collecting, either separately or jointly, statistical data? While this is the theme for later sessions in this workshop, I believe vehemently, that the objectives for, or uses of, library statistics should be thoroughly explored before and not after the criteria, definitions, means etc are determined. If we do not know where we are trying to go there is every likelihood that we shall get thoroughly lost. Unfortunately, I believe that the actual experience of librarians in the collection of library statistics suggests that not a few have in fact become enmeshed in a maze of data from which they can extract neither their libraries nor any semblance of meaning.

Elsewhere (Allen, 1984) I have elaborated on the uses to which library statistics may sensibly be put. However, in the present context it is necessary to review briefly the several broad areas of library activity where statistics may have useful applications, and to indicate how the nature of these uses may affect the problems of definition or collection of statistical data.

Contrary to what may be the common perception, I believe that the area in which statistics have the greatest potential value, and may indeed even have the greatest actual use, is the internal management of libraries. Almost on a day to day basis librarians involved in budget control, acquisition decisions, circulation policy review, as obvious examples, must make decisions which can only be objective in the light of past activity. And that past activity is only known accurately if it has been measured regularly, and the products of such measurement are library statistics. For such statistics to be a reliable basis for decisions on future actions, two conditions are essential. Firstly, the data must have been collected over a sufficient length of time for the natural fluctuations in the library's activities to be able to be smoothed out in the statistical analysis to within acceptable limits. Secondly, the measurements or recording of observations must have been based on precise definitions which have remained constant over the period in question, or, if there have been any variations in definitions it must be possible to derive data for common constant elements from all periods covered. This necessary consistency in statistical data will only be achieved if "the entire library staff.....understand what the manager is attempting in the collection of raw data and how it will be used; the terms

on the reporting sheets must mean the same to each member of staff" (Strain, 1982).

The detail of information needed for practical decision making within a single library may be quite minute, down to the level of use of single volumes, for instance, where there are questions of discarding stock or relegating to store. The reporting of data of such precise detail will rarely be required beyond the walls of the separate library, although it is possible to conceive situations involving inter-library co-operation where such detail could be used to good effect. Generally, comparisons of statistical data between libraries are made at grosser levels.

The second level of statistical data concerns libraries with a similar mission within a local region. Thus we may be concerned with public libraries, or school libraries, or special libraries, within a city or within a state. Here the objectives of collecting statistics may vary. It may be that there is some administrative relationship between the libraries in the group and that they are required to make statistical returns to some central authority, and this would be a common situation for public or school libraries. The problems then are not essentially different from those that occur within a single library, for each library is in fact but a part of a greater system. However, there may well be greater problems in the imposition of uniformity, either because authority is in fact divided and the central influence becomes weaker as the operating unit is physically or administratively more remote, or because a much larger number of individuals has the responsibility for interpreting definitions etc and may introduce a range of interpretations that inevitably confuse, to some extent, the meaning of the data that are recorded.

Between groups of administratively uncoordinated libraries, as may be the situation for special or independent academic libraries, the problems may be greater. The motivation for the collection of statistics as a group basis may not be present. If there is no requirement to report statistics on operations, the only other obvious motivations are either a strong professional commitment to "open management" or an expectation of some material benefit to the individual library. It would be uncharitable to undervalue the extent to which librarians, even chief librarians, may act from professional ideological motives; it is certain that there is a very widespread commitment to national and international programmes which offer little obvious or immediate benefit to the individual participants.

However, locally, it is often realistic to enter cooperative ventures in anticipation of some real benefits. Thus some rationalisation of acquisitions, or improvements in inter-library lending, are activities that may be advantaged through the compilation of accurate statistical information.

But where independent libraries agree to pool information about their operations the questions of practices and definitions become much more difficult. No longer are they merely a matter of interpretation. Two libraries may very well understand the alternative definitions for a particular area of activity, and still fail to agree on a common basis of counting; the result is that the data from these two libraries may never be meaningfully compared nor can their summary totals ever be aggregated. The library statistician must therefore enter the process of negotiation in an attempt to establish common bases for data collection. Such negotiations can be arduous and long drawn out, and there can be no assurance of final success. Indeed, time is often the enemy of agreement for librarians seem disinclined to depart from their own established traditions, in statistics as in other practices. And it must be admitted that there are areas of statistical data where a radical change could involve a library in very considerable revision of its records, or is in fact entirely impossible retrospectively. A change in the latter situation means that at the library will voluntarily introduce a discontinuity in its own data so that comparisons before and after the critical date will no longer be possible.

It must however be admitted that a major motivation among libraries that are nominally independent but nevertheless funded from the same or similar sources is to use comparative statistics in the annual battle for budgets. Probably nowhere is this more evident than among academic libraries. At best this may lead to a concerted approach to the funding authority, as occurred when the recently established libraries of Colleges of Advanced Education sought additional support from the Australian government in the early 1970's (Allen & Eichinski, 1971 (a) and (b)). In less fortunate circumstances it may lead to a dog eats dog situation where every librarian interprets the statistics to the peculiar advantage of his own library. This latter attitude is unlikely to sustain any ongoing useful cooperation in the compilation of accurate statistical information.

The urge to collect library statistics, on a regional or national basis,

across the various sectors of libraries, may seem remote from the interests of practising librarians in their own libraries. It is perhaps more understandable that governments, or their bureaucracies, may want to calculate some global figures on the support they afford to libraries or on the resources that the libraries they believe they support offer to their constituents (See Little, (1980) for a review of the library statistics collecting activities of the National Center for Education Statistics in the U.S.A.). To persuade such central authorities to provide increased support for libraries it may also seem appropriate to library organisations that some broad numerical measures of library resources and activities should be compiled and publicised. However, the consequent arguments must necessarily be based upon some greater assemblage of data, either in the form of even more widely collected statistics, or of some formally published standard. Unfortunately, such standards are rarely more than subjective extensions of observed aggregations or averages (See Stubbs, 1981). To complete the picture it is necessary to mention international statistical compilations, where all the problems that occur at the national or regional level are enhanced and aggravated.

It must be obvious that if there are difficulties in maintaining meaningful collections of statistical information within a single library over the years, or between similar neighbouring libraries, the problems must become progressively greater as the scale of the libraries involved, their purposes, and their geographical separation, increases in variety. The inevitable corollaries are that the number of elements of statistical information that it is meaningful to bring together, and the overall accuracy of the aggregations of such data, will inevitably decrease in relation to the range and distribution of the libraries from which the data have been assembled. However, perhaps because those who have been active at the national and international levels have not sufficiently attended to the exposition of the objectives for library statistics that are desirable, the quality of available national and international data leaves much, if not actually everything, to be desired. Logically, it is impossible to improve the data once it has been aggregated, so that if the situation is to be improved for the future, it is necessary to return attention to the basic concepts at the point of collection, namely in the libraries that are expected to contribute the source data.

In a discussion of the results of the first Census of Australian Libraries

1st distribution

Borch dt (1982) stated that "three fundamental questions have to be resol d before a statistical survey of library services can be successfully rrived at. These are :

what constitutes a bibliographical item?

who are the custodians of such bibliographical items?

what do we mean by service?

[These concepts.....are unfortunately not of the kind which permit eterna ly valid and unequivocal definitions." The mere mention of eternal values nay seem somewhat frivolous in an area of current activity where there a serious lack of concensus on even basic definitions. A point is wel made by Rocke (1982) who, while echoing Borchardt's basic questi s, goes on to identify the peculiar need of librarians in develo, ng countries to establish definitions relevant to their own situat ns. In these two statements are summarised the potential limitations to the alue of library statistics through the passage of time or the isolat ns imposed by geography. Regrettably, not even the international forums or the debate on library statistics, nor the efforts in this field of UNE O or ISO or national Standards Associations* have yet achieved any wor hwhile concensus from which national library communities or indivi al libraries can obtain reliable guidance.

Even if agreement can be reached on theoretical definitions it must be recogn ed that many librarians will decide to prefer their own variant interpr cations, either from conviction of their own superior understanding, or fror failure to understand the meanings of the definitions when they come to apply them, or because they have in their particular libraries establi ed traditions of measurement which they are unwilling or unable to modi . It must also be acknowledged that available "standard" definit ns will not cover all situations, materials or practices, and that in ny event libraries are dynamic institutions in which continuous develop nt will inevitably create problems in the application of establi ed definitions. Faced with such a problem, the practising librarian will no ally make a local decision, and thereby create another problem for fut e compilers of data.

At this oint in time the most that can be hoped for is that libraries

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* See fo example, International Standard ISO 2789 (1974) and USA Standard for Li rary Statistics (USAS 239.7-1968). A new USA Standard has been issued ecently.

currently involved in the collection of statistical data will continue the effort to improve both the quality, the comparability, and the range of data, and that libraries about to embark upon data collection for the first time will confer first, and seek out the most widely acceptable definitions or interpretations currently available.

Here, it is now proposed to examine the major categories of library statistical data, and to discuss some of the specific elements where there are conflicts over definitions and interpretations. For the purpose of exemplification the experience of the task forces that conducted the first and second censuses of Australian library services will be extensively drawn upon, together with the works of the compilers of the annual statistics of Australian academic libraries that appear each year in the September issue of Australian Academic and Research Libraries. Reference will also be made to the local experience of the library of the Western Australian Institute of Technology in maintaining its own data and contributing to both of the above exercises. Some indication of this local activity can be gauged from the statistical data included in the library's published Annual Reports since 1976.

The commonly collected library statistics fall fairly easily under the following headings :

Resources/collections
Staff
Finance/expenditure
Services/activities
Facilities and buildings
Organisation
Users or potential users

There is little possibility of confusion between these categories, although there may be some interaction; thus "organisation" may involve the identifying of branch libraries which may consequently result in either some detailed distribution of resources, staff, services etc among them, an alternative decision to aggregate some or all of this data in a single "library system" statistic, or, often with resulting confusion for the compiler, an intentional or accidental double counting. Again finance or expenditure, which incidentally may not be identical, is commonly subdivided by such headings as acquisitions (i.e. purchase of resources), salaries of staff, building (capital costs, and running expenses (i.e. other costs of providing services

etc). But finances/expenditures may also be divided between branches, or between the operational departments of a large library or library system.

In the questionnaire used for the 1982 Census of Australian Library Services it was considered necessary to define a library system or service, thus: "A centrally administered library service is defined as a library service with a central library and administration, exercising regular control over branch libraries. Branch library is defined as being in a physically separate building with its own stock and staff". This census was concerned with "library systems" as the units, and therefore the questionnaire sought to establish only which responses applied to a library operating as a single physical unit and which applied to systems comprising a central library with branches. The distinction may seem clearcut, but a little reflection and determination can produce models that might not obviously fit either alternative. Thus, for example, the Commonwealth Scientific and Industrial Research Organisation (CSIRO) has laboratories scattered across Australia, and a complex divisional management structure. Each of the major divisional laboratories has its own library, with the staff reporting to the chief of that division. Nevertheless, there is a central library which coordinates acquisitions, maintains a central catalogue etc., although the Chief Librarian does not exercise "regular control" over the divisional libraries or their librarians.

In the statistics for Australian academic libraries a somewhat different approach to organisation is taken, because it is possible to identify a distinct legal entity of College or University, whether it exists on one campus or several. A distinction in practice has however developed between the Colleges and the Universities. For the former the library statistics are based on the College library as a whole, and no account has been taken of branches or multi-campus operations. In the Universities in contrast, there has always been a special concern for medical and law branch libraries, and certain data (mainly resources) are specified for these separately, as well as being cumulated in the overall figures for each complete University library system.

Although in Australia data for branch libraries within systems is not being collected regularly on a national scale, this aspect of organisation is not one that should necessarily be ignored. There is a conventional wisdom among academic librarians that services provided through branch libraries

are relatively more expensive than those provided from a large central library. If this is generally or locally true, it should be of very considerable concern, not only to librarians but to those who finance libraries; but the case cannot be either proved or disproved if the comparable statistics are not available for both branch and central operations.

The statistical category that has traditionally most attracted and concerned librarians is undoubtedly that of resources. Individual librarians are conceited to watch their libraries grow; associations of librarians have been keen to impress governments and communities either with their success in collection building or alternatively with their failure through lack of funds; and at the international level UNESCO has been interested in comparable data on the library resources of member states. The problem of defining library resources is however akin to that of defining the human population of a national park; there are many kinds of individuals, many types and of widely varying sizes. Therefore there is a need to establish definitions of all categories of libraries' resources that need to be counted, and this has been done with reasonable success. There is the occasional argument in the no-man's-land of monographic series or concerning the uncertain standing of multi-media kits, etc. However, when it comes to the actual counting or measurement of these resources, there are still many practical difficulties.

There would seem to be a clear distinction between the number of physical volumes in a collection and the number of titles the same collection includes. It should also be obvious to any librarian that counts on these separate criteria will usually be different. But, some titles comprise a number of physical volumes, and some titles occur in a number of different editions, while conversely some physical volumes may contain more than one distinct title. Moreover, there may be disagreement as to what should qualify as a monographic unit. Is there to be a separate category of minor items, perhaps described as pamphlets and defined arbitrarily as, e.g. less than 10 pages?

An obvious reason for counting physical volumes, whatever their bibliographical character may be, is that they occupy shelf space, and library managers should be concerned to know how many shelves their collections currently occupy and, more importantly, how many additional shelves

they must supply next year, or the year after. However, for such a purpose the mere number of volumes is less than adequate, for volumes may be of varying size, in all dimensions, and such dimensions and such detail is not commonly recorded or reported in a library's statistics. Traditionally of course, it was usual for cataloguers to record the height of a volume and the number of pages, and from this information a reasonably accurate extrapolation could be made of the physical space required to house a volume. But how many libraries are now using these details in the computerised systems that would actually make it possible to translate them into shelf space occupied?

The other approach to monographic resources, in terms of titles, is obviously related to the coverage or richness of a collection. A single library may be concerned to establish its quality in relation to the potentially available publications, or to relate its collections to those of neighbouring libraries. Regional or national agencies may be interested to estimate the relative wealth in terms of range of library collections across the community. Obviously, the holdings of titles are more important in this context than the holdings of volumes. Unfortunately however, library statistics as generally collected, do little to reveal the richness of regional or national collections, because there may be, and in many situations there certainly is, a considerable duplication of titles among the libraries under consideration. If the degree of uniqueness of collections is a concern, conventional library statistics are of little help. Statistical analysis of collections can assist an understanding of the extent to which duplication may be occurring (see e.g. Gilbert & Immonen (in press), Knightly (1975) and McGrath (1980)) but if the concern is to avoid duplication in terms of specific titles, statistics will be of no help to the acquisitions librarians in their daily activities.

The reporting of serial holdings introduces a number of distinct problems that require resolution. The identification of serial publications is not a major issue, and all the major standards statements etc agree basically. When it comes to counting serials however, there is no unanimity. Thus, in the Australian census, two questions were asked :

How many bound volumes of serials are held by this library service? and

How many separate current serial titles are received by this library service?

Now while these questions recognise that serial subscriptions (or receipts) are essentially managed on a title basis, it is also assumed that these are subsequently translated into bound volumes on the shelves which are comparable to, and can therefore be cumulated with, monograph volumes in some greater measure of library size.

In the Australian academic libraries statistics there is a recognition, but not a resolution, of the conflict between bound and bibliographic volumes as applied to serials. The College libraries have adhered firmly to the concept of bibliographic volumes, but unfortunately the University libraries are divided on this issue. The point is, of course, that if only bound volumes are counted then, firstly if a library chooses not to bind serials, or has a serious binding backlog, these very real resources are just not counted, and secondly, if a library binds together a number of distinct bibliographic units (e.g. a number of Annual Reports) into composite volumes, the bibliographical resources will be underestimated.

The real problem facing the library statistician is of course even more complex. As with monographs, serials publications vary enormously as to the actual size of a single volume. How can one compare, let alone equate, a single volume of Chemical Abstracts with a slim twenty page annual report of some government department? And the situation is becoming more complex when it is realised that many libraries are now electing to purchase microform versions of serials as an alternative to binding, and then variously treating the unbound hard copy issues. The question of how to define a statistical unit for the counting of serial holdings is obviously complex, and getting worse. But to ignore it merely ensures that the statistics that will be recorded will be progressively less realistic as practices become more complex and variable.

It would be possible to examine all the other material formats which libraries now include in their collections, and problems of definition and of counting would be found in all of them. The question of bibliographical identity or physical units recurs for microfiches or microfilms. There is need for a decision about kits as to whether to count them as composite

units or to count the component parts. There are slides and slide sets, maps and map series, films and tapes and photographs, and newest of all, videodiscs. It would be foolishness to suppose that a set of definitions could be devised whereby this Noah's Ark of library materials could be contained once and for all, and from which some magical formula could be derived for the general comparison of collections of almost infinitely diverse composition and character. Moreover, it may be salutary to step back from this apparent problem, and perhaps in a philisophical sense also in time, and to consider whether we can agree with Borchardt (1982) that "the number of printed records (books, journals or such of their surrogates as can be 'read' e.g. microforms) are probably of greater significance for the nation than the presence of primary school teaching and learning kits and illustrative slides..... It seems unjustifiable.....to force a national census of library services into such a grid that these materials rank equally with what I shall call, for the sake of extreme simplification, the bibliographic resources of a nation."

The ISO Standard 2789 adopts a curiously dichotomous approach to the measurement of collections. For the total collections of books, periodicals and manuscripts it requires the reporting of the "metres of occupied shelves and volumes", but for microforms stipulates "number of rolls" or "number of physical units". Again, additions to holdings (i.e. acquisitions) are to be reported as

"(i) Books by titles and volumes

(ii) Manuscripts by number of units catalogued

(iii) Microforms.....by number of rolls...[or] number of physical units."

Apart from the element of inconsistency that is evident, there is the concept of measurement of a collection by the linear extent of occupied shelving. A similar concept has also been applied to microfiches, which some libraries have measured by the number of filled drawers or the linear total of these drawers as metres etc. While these linear measures may have some value in planning accommodation for stacks, there are too many uncertainties in the physical formats of materials, their packing on shelves, or in the accuracy of measurement, for such data to be of value as a comparative measure. It also lacks the desirable character of easy visualisation; who actually knows what 15,437 linear metres of books looks like or means in terms of volumes or titles?

The library stock of books and other materials as a measure of the

importance or adequacy of the collection is usually reported in figures for total holdings. Such a statistic does not inform in any way about the quality or relevance of the collections. It is perhaps hard to imagine how a bare statistic could reveal matters concerned with quality which, in some degree, must be subjective. However, for many libraries, relevance must mean, or at least be strongly influenced by, the up-to-dateness of the collections and this can be fairly easily measured from the annual acquisitions activity. Surprisingly little attention has in fact been given to acquisition rates as measures of library adequacy. One notable recent attempt to derive standards of acquisitions activity for Australian College libraries from a variety of data input (Wainwright and Dean 1976), achieved some methodological success, but regrettably, due to the accident of timing and the local political situation it has not had any worthwhile impact on actual library funding (Allen and Brockman 1983).

An often collected surrogate for actual acquisitions statistics is of course expenditure on the purchase of materials. While there is undoubtedly value in the statistics of the financial side of library operations, as a measure of acquisitions a single line "book vote" figure, or even a break down between, e.g. books, serials, and other materials, will convey limited information about the actual collection growth that a library may achieve. There are three major variables that affect the interpretation of acquisitions funds, namely the changing value of the currency in which they are expressed, the independently changing cost of materials, and the very considerable variation in the average costs of items between one format and another, and between different subject fields. While the effects of the first two of these can be interpreted from generally available indexes of economic activity etc, the last depends entirely upon the subject profile of the individual library and the general collecting policy. As books in the hard sciences may easily cost, on average, four or five times as much as those in the arts or humanities, if the collection policy is not known it is virtually impossible to relate acquisitions funding to collection building performance. The aggregation or averaging of acquisitions funds for libraries that do not have closely similar acquisitions policies will therefore confuse rather than illuminate any picture that may be drawn of library resource development. For the individual library however, a detailed analysis of acquisitions expenditures by format, by subject, by supplier, by unit cost etc. should be a routine requirement for, without this information it is impossible to pretend that there is conscious management control of the acquisitons programme.

The second major area of statistics commonly collected by librarians is that of staffing. The importance of adequate and competent staff to the effective operation of a library is obvious, while it may also be noted that salaries typically account for more than fifty per cent of the library budget and that this percentage is tending to grow in many countries. There also tends to be an attitude among the managements or governments that fund libraries, and even perhaps among the public and the library clientele, that while library books are desirable, librarians have to be endured, but not more of them than is absolutely essential! Therefore, data on library staff may not have the publicity value that can be extracted from data on library stock, but is of more concern to internal library managements.

As every librarian knows, there is a considerable range and variety of staff working in libraries, and it is continuing to diversify. Only a minority of library workers should properly be described as librarians. Collections of library statistics therefore go to some effort to achieve classifications and definitions of at least the major groups. But, as with library resources, there are uncertainties in the use of terminology, there are variations in practice between countries and between libraries in a single country, and there are continuing changes over time.

A basic question that must be resolved before data on library staff is collected is whether to count persons or positions. The difficulty with counting persons is that there will inevitably arise difficulties of interpretation of qualifications in defining such terms as professional etc. This difficulty led Australian University Librarians to develop a complex classification based on the possible mixes of academic and librarianship qualifications. Thus, the following categories were identified for a body of staff all more or less involved in the same range of activities and essentially interchangeable, other factors being equal :

- Graduate professional staff
- Professional qualifications but no degree or equivalent
- Graduates without full professional qualifications
- Assistants without or with only part academic or part professional qualifications

If it is decided to count positions, then the classifications and definitions must relate to functions. Hopefully it is not then necessary to spell out in detail what functions are performed by librarians, library assistants, typistes, computer programmers etc, although it must be recognised that interpretations will vary, certainly between nations, quite possibly between the major sectors of libraries (e.g. public compared with academic libraries) and sometimes between individual otherwise similar libraries according to the personal attitudes or policies of the Chief Librarian. Nevertheless, on balance, there seems to be a rather better chance of consistency of interpretation of positions than of personal qualifications, and the Second Australian Library census adopted that approach. As a result, relatively simple definitions were provided, thus :

Librarian

Positions normally requiring eligibility for associateship of the Library Association of Australia.

Other Professional staff

Positions normally requiring tertiary qualifications or eligibility for membership of a professional organisation, e.g. systems analyst, accountant.

Library Assistant

Positions directly involved in some aspect of library technical service (accessioning, processing and cataloguing) or library reader services. Include here positions normally requiring library technician qualifications. (Do not include book shelvers or security attendants.)

Secretarial, clerical and typing staff

Positions involved primarily in duties of a general, administrative, financial or clerical nature, not involving specialist library work.

Other staff

Include here all staff not shown above, e.g. book shelvers, binding staff, storemen, maintenance workers, etc.

While the foregoing categorisations seem to work reasonably well in Australia, and the academic libraries as a group are now moving towards acceptance of this approach, it must be recognised that they will not work everywhere. There is an extensive literature on the subject of professionalism in librarianship and, though it is not directly relevant here, the varying concerns are still very much alive. In North America it is unlikely

that the simple definition of a librarian given above would be acceptable in all sectors, but this only illustrates the reality that librarianship is not organised in identical ways in all countries. In part this is a consequence of varying professional educational processes, in part it is a matter of general traditions, and in part it is a matter of varying stages of social development.

There are however two further aspects of library staffing that statisticians may wish to record. Perhaps, at least in economically affluent countries, the pressures created by technological advances, economic recessions and growing populations, and the desire, particularly by women to achieve life long careers, have focussed attention on part-time employment. There may therefore be a significant difference between the number of separate individuals employed by a library and the effective number of full time positions. Statistically this difference may be recorded by counting the actual numbers of persons employed and, alternatively, the full-time equivalent (FTE) calculated on some standard definition of a full-time position. This definition is most conveniently expressed in terms of hours worked per week, although this approach is complicated in libraries where work is seasonal (e.g. schools or universities) and where some staff are only employed during the most active periods. Of course if there is no generally accepted limit to the hours a library employee is expected to work, such a measure becomes very variable between libraries.

The third approach to staffing is to divide them between the major distinct functions of a library. The most commonly acceptable would be technical services (i.e. acquisitions and cataloguing), reader services (i.e. circulation and reference), and administration. It is possible to subdivide staff further, but differences in internal organisation between libraries is likely to make this unprofitable. However, internally, the library management may well need the finer tuning. While broad comparisons between libraries on the basis of staff distribution may be unreliable because of differing administrative structures, there is a real need for precise data on the relationships between staff effort and the various products of library work. Detailed work analysis can relate specific outputs (e.g. orders placed) to the staff input, and such data collected across a sufficient number of libraries would permit estimations of staff or systems efficiencies.

Resources and staff are the two major inputs in the library operational equation. Both are reflected in the funding and expenditure statements,

and it is usual for library statistical returns to include financial data. Any interpretation of such data, especially through time series, requires a parallel knowledge of the value of the currency to some standard base. It may not be appropriate to include such indices in actual library statistical tables, but it should be noted that there are considerable labours involved in establishing, retrospectively, the correct values for currencies, the average price of materials, etc.

There is not usually any great difficulty in separating expenditures on staff from those on acquisitions. However, there may be problems if some libraries use budget figures while others use actual expenditures, there being considerable difficulties or delays in establishing the latter in respect of purchases in some accounting systems. It is also surprising that published library statics rarely distinguish expenditures on monographs from those on serials and other materials, although the excessive differential increase in the cost of serials has been concerning librarians almost annually for the past forty years.

Some difficulties of definition may arise in relation to the miscellany of other expenditures that a library may incur. Binding often figures as a significant cost, but may be variously present according to the existence or otherwise of a library bindery. Stationery, travel, equipment maintenance, printing, computing facilities etc. make up a growing list of largely unrelated but nevertheless essential expenditures. With the possible exception of computing, which looks set to become a more visible component, there seems little reason to identify such expenditures individually, except in the library's own annual accounts.

The input statistics so far discussed are undoubtedly important as indicators of the cost of libraries to the community, and as comparative measures of activity. However, they do not reveal anything about the actual benefit that libraries bestow on the communities that support them. Librarians at large have tended to assume that the benefit is self-evident, and that the main use of statistics is to demonstrate how their libraries rank, one against the other, or against some external criterion such as levels of publication. As a result cost-benefit analysis, or similar evaluative techniques are not prominent in library literature.

The measures of outputs, which are necessary for any estimation of benefits, are generally quite limited, and also much less reliable or controllable than

are the input statistics. Almost the only output that is widely reported with any sort of reliability is that of loans. Unfortunately it is extremely difficult to establish any precise meaning for loans statistics that could permit either their cumulation or their comparison between one library and another. Libraries vary enormously as to what may be borrowed, for how long or how many items at a time, whether loans may be renewed and if so whether these are recorded as new loans or not, and so on. For many libraries there are also distinctions between loans that go outside the library, and those made within the library from a reserve collection or from a major closed stack. It seems very doubtful whether loan statistics have any value outside the originating library, although it must be admitted that, no doubt due to their frequent publication, they may now be accepted as evidence of performance in political circles. However, it is hard to see how such evidence can benefit one library without, in the long term, harming another, unless politicans are even more myopic than one may believe possible.

A separate, but relatively minor, area of lending activity which, statistically, is generally given quite unjustifiable prominence by librarians, is inter-library lending and borrowing. This undue regard perhaps derives from two beliefs or concerns. On the one hand inter-library lending is seen as evidence of the fraternal relationship between libraries which is idealogically strongly ingrained in librarians everywhere. Therefore, to demonstrate it is to establish professional merit. Conversely, there is a concern that inter-library lending or borrowing results in significant costs to the library and perhaps to costs disproportionate to the service rendered.

Before the days of xerography inter-library loans were essentially what the name implies, physical loans of library items. Today that is no longer true, and by far the greater part of the inter-library traffic is in copies, incorrectly called "photo copies". The difference is significant because traffic in copies is one way and involves both libraries in significantly less work than does the lending and borrowing of an original bibliographical item. And yet ILL statistics rarely make the distinction between true loans and the supply of copies. It is a distinction that should be made, if inter-library traffic is to continue to be the subject of statistical recording.

It must also be noted that inter-library loan requests that fail, that is do not result in either a loan or the supply of a copy, nevertheless generate a considerable amount of work for library staff. The second Australian Library Census

recognised this fact in asking the question :

> "How many inter-library loan requests by this library ultimately remained unsatisfied?"

Copying in libraries has become a significant activity, especially in academic and school libraries where the introduction of coin-operated machines has had a dramatic impact. In Australia changes to the Copyright Act to make specific provisions for copying in and by academic libraries (Allen, 1984) have produced the expected upsurge in activity. Thus, at the Western Australian Institute of Technology library, the number of copies doubled, from one to two millions, between 1981 and 1983. It would therefore seem that some ongoing statistical record of this activity would be justified.

The ISO standard does include a definition for "photo and other copies", but specifically restricts this to "copies produced by libraries for their users (excluding those made by coin-operated copying machines installed in library premises), and "those designed to take the place of original materials in inter-library lending". The standard further states how copies should be counted :

" (i) paper copies by number of sheets
(ii) microfilms by number of frames
(iii) microfiche individually "

The result of any statistic compiled to this standard must be both but a small part of a major academic library's copying activity, and internally confused. Copies made on coin-operated machines are just as significant an element in library service as those made by library staff, while the number of copies made for inter-library loan purposes etc will generally be only a small proportion of the total. In reality copies have become an alternative to loans for the user, especially for categories of materials in high demand (e.g. reserve collections) or that are not available for loan (e.g. serials perhaps or reference books). Alongside in-library use this is undoubtedly a major element of library service that is not currently measured in many libraries, or if it is measured, is not measured in such a way as to reveal the contribution to service.

While for inter-library loan copies it is possible to record the number of bibliographical items that the copies replace in this traffic, it is not possible, with coin-operated machines used directly by readers, to capture the bibliographically related data directly. However, periodic statistical

sampling should enable both accurate and easy estimation of the actual number of bibliographical items represented by a given number of copy sheets. If the nature of the items sampled (e.g. extract from monograph, serial article, personal notes etc) is also recorded, it should then be possible to present this data as a form of library use comparable to normal loans data. Similar comments are applicable to other forms of copying, although the volumes are likely to be much less, and presumably in the future could also apply to the use of facsimile transmission as an alternative to copying within the providing library.

Even less attention has been given by library statisticians to the less physically tangible services provided by libraries. Several areas of activity are in need of quantification if there is to be any real improvement in the assessment of benefits accruing from the operation of libraries. Thus, reference work, on-line information retrieval, and reader education are all basic or major functions for the professional staff but none of them appears routinely in statistical returns. It is no doubt true that the main reasons for this failure are the difficulty of defining standard units for the measurement of these activities and the problem of ensuring reliable recording. Brooks (1982) comments that reference librarians "have a vested interest in being generous with their counts on slow days, and may be too rushed on busy days to mark the tally sheet". However, there is work going on to improve the definition of measurable reference activities through, for example, the classification of reference enquiries according to type and by the length of time taken to answer them. (Emerson (1977), Kantor (1981), Lamb (1981), Rothstein (1964), Pings (1976) and White (1981) provide a background to the issues and some evidence of the directions and extent of recent studies.)

This review of problems of definition of library statistics has only covered a selection of the more obvious, and perhaps more important, areas and specifics. There are numerous other details in the area of resources, staff or services that require as much attention if they are to be measured effectively. And there are in addition significant considerations in library buildings, facilities, and last but hardly least, the user population. In these, as in the other areas from which statistical data may be collected, the first question that should be asked is why, or for what purpose, is the information required? Only if a clear and precise answer can be given to this question should the effort be made to develop precise definitions and then to establish procedures for the collection, recording and possibly reporting of the data.

If the problems of definition of library activities involve both theoretical and philosophical considerations, the actual collection of statistics poses very practical challenges. Again, the basic issues must first be faced within the individual library and as part of routine work. Library statistics cannot be divined at a single or arbitrary point in time, but must be the result of considered instructions to library staff to record precisely defined data on their activities or products, and to make such records regularly and as frequently as may be necessary to ensure accuracy. Some activities may be tallied, one by one, as they occur, while others may be batched and the work output for a period, such as a working day, counted at its close.

The collection of data on a library's activities should be of day to day relevance to that library's management. From a regular presentation of such data, section managers can assess the progress of their staff on a daily or weekly basis, while the cumulation of such information into monthly statements can alert the Chief Librarian to a need to divert staff resources to overcome some bottleneck. At the end of the year the cumulated records of activity may become the basis of a library report, the series of which over the years will chart the library's progress. From such data must come any reliable reports to organisations gathering data from a number of libraries, for it is uneconomic for any library to attempt to maintain more than one system of statistical measures of its activities. Where conflicting demands of libraries are in fact made, it is probable that some of the returns will be, to put it politely, "estimates".

Within the library statistical counts of library activities may be obtained in a number of different ways. The most obvious is when individual staff members keep tallies of their operations. While such direct collection techniques cannot be ignored, and indeed for some activities such as reference services it may be the only practical method, it must be recognised tnat the results are subject to human frailty and error. Nevertheless, it can be shown that, in certain circumstances, self recording of activities by individual staff may, over a limited period and with their positive cooperation, be as reliable as independent observation.

Independent observation of staff orpatron activities can of course remove most of the doubts that may surround any self-monitoring method. However for the purist there is always the worry that the act of observation may

in some way influence the attitudes or performance of the observed. But of more practical consideration is the undeniable reality that the use of personal observers to obtain numerical data about library events is extremely expensive in staff time. Even where library activities are almost continuous (and many are not), the cost can rarely be justified, and then only on a sampling basis. Thus a recent study in Western Australia aimed to establish the extent to which library patrons moved between the major academic and research libraries of Perth (Allen and Exon, 1983). This project required a team of observers, over three months, to do nothing but interview library patrons as they left the libraries, and could not be supported by any library on a continuing basis. Nevertheless, independent observers may be necessary for certain purposes, and especially where an objective is to establish norms for library staff work performance.

The counting of such activities as loans, cataloguing, placing of orders, etc may be built into the coutine procedures. Thus, a system that allocates consecutive numbers to orders or accessions should enable the number of individual unit activities to be obtained by simple subtraction. Again, a loans system that retains a book card or some other physical evidence of the transaction can be measured by a daily count of these items, the daily units can be entered in a record book, and weekly, monthly or annual cumulations obtained by additions.

Increasingly however, mechanical and electronic devices are enabling library activities to be counted independently of the staff or users of the library, and usually with greater accuracy. One of the simplest counting devices is a mechanical counter that may be attached to a turnstile and will count the number of persons entering or leaving the library. These are certainly more accurate than any person, and can work through all hours that the library is open. But there can be mechanical problems of multiple counting, and like all mechanisms, they can break down. A more sophisticated method may employ a magic eye, depending upon a light beam focused on a photo-electric cell, but essentially the same limitations may apply.

The counting of acquisitions was first mechanised by the use of the automatic numbering machine, and this is still a useful device. However, if any analysis of accessions between unique and duplicate copies, multi-volume sets, or different formats of materials, is required, there are

complications in management of the process. Photographic processes, as in photo charging of loans, introduced another machanical means for counting a basic library activity.

The real breakthrough did not come however, until the computer arrived in the library. Automated systems, if properly designed, can take care of many of the data collection chores of the library. But, as with any other statistical collection, unless the librarian first specifies what data is required, the system will not, and indeed may subsequently be unable to, supply the necessary information.

At the Western Australian Institute of Technology we have now stopped worrying about physical counts of volumes as accessioned, or as they sit on the shelves. The size and analysis of our collections is derived from our master computer catalogue file from which we can learn not only how many titles, how many volumes or how many duplicates we may have, but also how these are distributed among our branches or between different subject classifications. The file also automatically accounts for items discarded or declared lost. Moreover, we also have a separate record of the loans of each physical item, and the identity of its borrowers, and these can be related to the catalogue file to reveal what is being used, and which groups of our academic staff and students are our most active users. Only when this sort of information becomes available on a regular basis can library management make routine and meaningful use of statistical information for day to day decision making.

Collecting statistical data from a number of libraries is a quite different matter from the recording of data within a single library. Nevertheless, library statistical cumulations rely, for their ultimate significance, upon the reliability of the initial recording. In Australia, two quite different situations for statistical collection are exemplified by the annual academic libraries data and by the less frequent, newer but broader ambition of the Census of Library Services.

For a number of years now the Australian academic libraries statistics have been collected in two parts, by two separate individuals, one working with the university libraries and the other with the libraries of the Colleges of Advanced Education. Next year we expect that, for the first time, these two exercises will be joined together and effectively managed from the Western Australian Institute of Technology library. Over many

years definitions have been refined, differences narrowed, and collecting procedures established. The procedures now in force for the College sector may now hopefully be described as typical.

Early in the year two copies of a blank collecting form are mailed to each contributing library, together with a covering explanation of requirements, deadlines etc. Inevitably, not all libraries respond by the deadline, and reminder letters have to be sent and in extreme cases, libraries are contacted by telephone. When returns are received they are checked visually and then keyboarded to add the data to a computer file. The computer than makes certain other checks to eliminate invalid data (e.g. no letters where there should be numbers), to compare certain groups of data which should add up to identical totals, e.g. total staff by department should equal total staff by classification.

The next stage is to have the computer print out a draft version of the data as it has been taken up and verified. This is mailed to the originating library with indications of where apparent "errors" have been detected, together with a form for the reporting of corrections. After this checking process, the revised data is output by the computer in a format ready for typesetting by the publishers of Australian Academic and Research Libraries. These processes take four to five months from start to finish, and, for the 52 College libraries, occupy an experienced librarian, who understands the system, for about eight working weeks. For some years, while the system has been developing, the costs have been borne by the Western Australian Institute of Technology library, but the Principals of the Colleges have now agreed to contribute on a basis of equal shares. A similar cost sharing agreement is expected to operate for the Universities next year.

This system of data collection is now well established, is quite sophisticated, and is not really very costly. Also, it has made it possible to establish a true statistical data base which can be used for statistical analyses that would be quite impossible by manual means. Nevertheless, it must be admitted that there is still considerable variation between libraries in the interpretation of some data fields, and there is no doubt that some incorrect data is still being reported.

The Australian Census of Library Services has been a more ambitious project in that a survey of all types of libraries has been attempted.

Howeve , the range and detail of data sought was less than for the annual academ.c libraries statistics. The first census was managed from one centra office, and the data was cumulated manually. For the second census the collection form was considerably modified and simplified, and its distribution and collection were organised on a state basis. While this l:ter procedure achieved a generally better response rate than for the fir.t census, difficulties were still experienced. State school library author.ies were not particularly cooperative and in the end this segment was dr.pped from the file. Some state coordinators were clearly less effici.nt than others so that the response rate or reliability from one or two tates was significantly below that for the rest of the country. And at .he end the data for the Northern Territory went astray in the mail from Da win to Perth, and for most of it, no copies had been kept at source.

The one big step forward that was made in the second census was to process the dat by computer. There is in consequence, a data base of the returns from th second census which will facilitate further study of its implications, or comparison with future collections. Unfortunately, as yet no way has bee found to build on this foundation, and there is some doubt as to whether any organisation or library will come forward and undertake a third Austral.n census.

A compa ison of these two statistical operations may underline the need for commitm nt, from individuals and from organisations, if library statistical procedu es are to be effectively managed on a national scale. Useful results are unlikely to be obtained in one-off exercises by isolated tempora. / enthusiasts. It is also open to serious questioning whether it is eith possible, or profitable, to establish unified statistical systems for all types of libraries. Ir may well be advisable to accept that librari do fall into one of a small number of very distinct types, with differe operating methods, differing objectives, and quite different statist.al needs. A series of statistical collections based on library type ma be both easier to organise, and in the end, more meaningful. It may .en finally be asked whether overall national, let alone international, compilations of necessarily rather crude numerical measures of librari of all kinds, are of any real value to anyone.

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DEFINITION AND COLLECTION OF LIBRARY STATISTICAL DATA: THE NIGERIAN EXPERIENCE

BY

J.A. Dosunmu
Assistant Director (Bibliographic Services Department)
National Library of Nigeria
Lagos, Nigeria

DEFINITION AND COLLECTION OF LIBRARY STATISTICAL DATA: THE NIGERIAN EXPERIENCE

A. At the general conference in 1970 UNESCO passed the Recommendation concerning the International Standardisation of Library Statistics. Soon after this the Federal Military Government of Nigeria designated the National Library as the centre to collect, collate, analyse and disseminate library statistics in Nigeria.

The National Library in recognition of the importance of Library Statistics and the need to have available statistics on the different categories of libraries in the country organised the first National Conference on Library Statistics in Lagos in 1973. The conference set out to investigate existing statistical practices in various libraries in the country and to evolve a national system for collection and control of statistical data and to ensure their standardization. For full background information on the subject it is necessary to consult the proceedings of the 1973 conference titled National Conference on Library Statistics. Lagos, July 31st to August 3rd 1973, Lagos, National Library of Nigeria, 1974 (National Library of Nigeria Publication No. 31). Soon after a statistics section was created in the National Library to handle all matters concerning library statistics. In 1974, National Digest of Library Statistics was published covering figures for 1972.

Our experience in Nigeria could be summarised as follows. The task of completing Unesco questionnaire by various libraries in the country yielded inadequate data returns. This fact was reflected in the number of gaps in the resultant Unesco statistical yearbooks issued between 1972 and 1980. The National Library of Nigeria as the designated centre for collection of the statistical data, felt the need to do something

to correct the situation.

As a remedial measure the National Library of Nigeria decided upon the following line of action.

1. To set up a task force comprising seasoned librarians selected from all over the country, to look into the issues involved in collection and transmission of statistical data on Nigerian libraries and make recommendations to the Director, National Library of Nigeria on the best approaches to resolving the issues identified as obstacles to effective data gathering and transmission.

2. Modify Unesco questionnaire, if necessary, in order to facilitate completion by all types and sizes of libraries.

In his inaugural address to the Task Force the Director of the National Library of Nigeria charged members with the following terms of reference:

B. i. The Task Force is to function in an adivsory capacity to the Director, National Library of Nigeria.

ii. It is to examine the various proforma for collecting library statistics with a view to formulating acceptable form conforming with the requirements of UNESCO resolutions of 1970.

iii. To suggest a strategy for obtaining accurate library statistics throughout the country.

iv. To advise on workshops at zonal levels aimed at the correct filling of the National Library questionnaire on library statistics.

After three meetings it was clear to the Task Force that at the root of the issues they were attempting to resolve were these factors:

(a) Lack of knowledge of the 1970 Unesco recommendations on library statistics.

(b) Absence of a complete inventory of Nigerian library systems.

(c) Absence of suitable data recording procedures in known libraries.

The Task Force therefore requested the National Library to organise a series of workshops in suitable zones to which the country had been divided. The objectives of the workshops would be:

C. (a) to introduce participants in the workshop to UNESCO recommendations on library statistics.

(b) to discuss with or teach participants how to generate and collect library statistics.

(c) to prepare them for filling the questionnaire on library statistics.

After these workshops the Task Force knew enough of the problems facing the most of libraries to enable them revise the existing questionnaire and compile suitable explanatory notes. (Please see appendixes A and B).

When the new questionnaire was put into circulation returns showed a remarkable increase of approximately 20% over the average prior to the work of the Task Force. However, the following passages taken from responses to the questionnaire even after the revision exercise, shows the variety of factors militating against effective gathering of data for library statistics in the country.

D. 1. "At present it is impossible for us to fill up the questionnaire because we have never made such comprehensive statistics for our library."

2. "There was difficulty in distributing the questionnaires especially to libraries outside this 'town.' Our van cannot make any trip to 'X' for instance without breaking down and in order to collect completed questionnaires with minimum delay not only one, but regular visits are inevitable, ... I am saying this from my experience when I undertook such programme for Mr. 'X' a year ago."

3. "It is not possible to return them before 31st August as requested by you since they were not even received by that date."

4. "I am directed to refer to your circular letter dated 28th August, 1979 and to inform you that in as much as this Local Government has no library, the completion of the attached questionnaire could not be carried out."

Note: The questionnaire was sent to this Local Government because it had a library which by the tone of this reply was no longer existing.

5. "We are sorry for the delay."

6. "We are unable to send the questionnaire for 'X' University because, according to them, some portions of the questionnaire have not been completed. As soon as it is completed we will send it to you."

Note: This was dated 9th October, the closing date was 31st August.

7. "I regret to mention that these questionnaires arrived late. We could therefore as a result not meet your deadline."

8. "Please note that most of the records you requested are not kept in this library."

9. "A number of questions cannot be answered at this stage as we have not yet had time to collect the statistics for the newly constituted reference library."

10. "I enclose the two forms completed to the best of our ability since we do not have some of the information requested."

11. "It is regretted that the questionnaires were not returned in good time. It is due to the comprehensive nature of the questionnaire which requires looking into various documents for relevant details... The information contained is that which is available to us at that material time."

12. "We regret to say we cannot complete the questionnaire since our library was closed early in 1979 and the stock dispersed. We have not kept the records you require."

13. "We have tried to fill in the questionnaire to the best of our ability, considering that the International Unit has no professional librarian."

These problems not withstanding, the exercise yielded good results

in more areas than one. The initial goal was to ensure regular flow of suitable data to UNESCO through the National Library. The following is a list of fringe benefits which accrued:

E. i. Many hitherto "unknown" libraries were brought together in zonal groups with the overt aim of learning how to complete the questionnaire but the list of participants in these zonal workshops brought into limelight some additional 10-20 per cent of library services within the country which could otherwise have remained "unknown" and therefore out of all communication range.

ii. As an extension of the first benefit mentioned above, information on libraries and library services within the nation increased appreciably at the national centre and the data acquired for internal consumption by the library statistics unit assumed more meaningful dimensions.

iii. Returns made to the National Collecting Centre for library statistics were visibly more accurate, more comprehensive, more regular in frequency, moreover, they arrive within shorter time of the distribution.

iv. There was increased awareness of the number and value of library services in the country.

v. A number of library institutions indicate that the availability of data they now gather in their institutions improved their budgeting techniques and procedures, making it easier for them to convince their authorities to release more funds.

vi. A number of libraries have claimed that they are now setting goals and targets for their services with greater facility than they did before they got involved in the national effort on compilation of statistical data.

vii. The National Library of Nigeria now finds it easier with all the data at its disposal to describe, compare or evaluate library services without having to do a survey of the physical facilities and without having to pay visits to those libraries.

viii. The last result to be mentioned is the ease with which the National Implementation Committee on Co-oeprative Acquisitions was able to use the statistical data, gathered with a view to completing Unesco questionnaire, for zoning the country into regions expected to be self-sufficient in terms of comprehensive collections after a given number of years of the implementation of the scheme.

The national co-operative acquisition scheme has taken off with moderate success. The world wide economic recession has taken a negative toll of the scheme while at the same time justifying the vision of those who planned and planted it. The natural offspring of the scheme - an inter-library lending scheme on the national scale is emerging. Appropriate forms have been designed and procedures forged. The degree of success and the span of life expected of these twin sister schemes are outside the purview of this exercise. Suffice it to place on record that they evolved from conscious efforts to improve availability and flow of library statistical data.

APPENDIX A

QUESTIONNAIRE ON LIBRARY STATISTICS FOR THE YEAR 19____

Library Profile:

(a) Name of Library: _____

(b) Address of Library: _____

(c) Telephone No. _____ Telex No. _____

(d) Name of Librarian/Director: _____

(e) Year of Establishment: _____

(f) Type of Library: (Tick as appropriate)

Public ☐ Academic ☐ School ☐

Special ☐ National ☐ Others ☐

(g) Classification scheme used _____

_____

(h) Number of Librarians: (see definition on attached sheet)

(i) Administrative Units ( )

(ii) Branches ( )

(iii) Number of service points ( )

(iv) Mobile Libraries ( )

(i) Name of Governing Body/Library Authority: _____

_____

(j) Source of Funding: (Tick as appropriate)

Public/Government ☐ Private ☐ Community ☐

Library Budget:

(a) Capital

Buildings

Equipment

Others

Total

(b) Recurrent

Salaries and Wages

Books and related materials

Repairs/Maintenance

Utilities

Staff Training

Loans and advances

Miscellaneous

Total

Grand total of (A) and (B) above.

3. Physical Facilities

(a) Net area of buildings assigned for Library purposes

(square Metres) _____

(b) Seating Capacity

(i) Ultimate seating capacity _____

(ii) Present number of seats available for library users _____

4. Population Served

(a) Public Libraries:

(i) Population of state/town/village (delete as applicable)

where the library is situated: _____

_____

(ii) Registered readers

Adults _____ Children _____

(b) Academic School Libraries:

(i) Population of institution

Academic Staff _____

Other Senior Staff _____

Postgraduate Students _____

Others (specify) _____

(ii) Registered readers

Academic Staff _____

Other Senior Staff _____

Postgraduate Students _____

Other Students _____

Others (specify) _____

(c) Special Libraries

(i) Population of Ministry/Organization

Senior Staff _____

Junior Staff _____

(ii) Registered readers

Senior Staff _____

Junior Staff _____

(d) School Libraries (primary and post-primary)

(i) Population of institution

Senior Staff _____

Junior Staff _____

(ii) Registered readers

Senior Staff _____

Junior Staff _____

Materials Collection

(a) Books and Related Materials

	No. of Linear Metre Shelves Occupied		Number of Volumes		No. of Titles	
	Total Collection to date	Current Annual Addition	Total Collection to date	Current Annual Addition	Total Collection to date	Current Annual Addition
Books						
Periodicals						
Current titles						
Bound volumes						
Nigerian Govt. Publications						
African Govt. Publications						
Other Govt. Publications						
U.N. Documents						
Special Collections (specify)						
Theses						
Others (specify)						

Non-Book Materials

	Total Stock to date	Current Annual Addition
(i) Microfiches		
(ii) Microfilms		
(iii) Microcards		
(iv) Maps		
(v) Phono-records		
(vi) Phonographs & Drawings		
(vii) Films		
(viii) Slides & Transparencies		
(ix) Video recordings		
(x) Cassette tapes		
(xi) Manuscripts		

Gifts and Exchanges

	To Other Libraries	From Other Libraries
Books		
Periodicals		
Nigeria Govt. Publications		
African Government Publications		
Other Government Publications		
U.N. Documents		
Theses		
Microfilms		
Microfilches		
Microcards		
Maps		
Phonorecords		
Photographs & Drawings		
Films		
Slides and Transparencies		
Video recordings		
Cassette tapes		
Manuscripts		

6. User Services

(a) Reference and Information Services

	Number of requests received	Number Satisfied	No. of request referred to other Libraries	Number Satisfied
Enquiries				
Transaction				
Compilation of Bibliographies				
Booklets etc.				

(b) Circulation Services

Type of Materials	No. of Loans	No. of Consultations
Books		
Periodicals		
Newspapers		
Documents (including Govt. Publications)		
Theses		
Manuscripts		
Microfiches		
Microfilms		
Maps		
Phonorecords		
Photographs & Drawings		
Slides & Transparencies		
Cassette Tapes		
Video recordings		
Other (specify)		

(c) Reserved Collection

(i) Loan period (e.g., 1 week, 2 weeks, 4 weeks) _____

(ii) No. of items borrowable per user _____

(d) Inter-Library Loans

	No. of requests to other Libraries	Number Satisfied	No. of requests from other Libraries	Number Satisfied
(i) Within Nigeria				
Books				
Photocopies				
Others (specify)				
(ii) International				
Books				
Photocopies				
Others (specify)				

8. Library Services and Facilities

(a) Tick/Indicate number, as applicable: Number

(i) Photocopiers _____
(ii) Binders _____
(iii) Printing Press _____
(iv) Microform readers _____
(v) Microform reader-printer _____
(vi) Photographic unit _____
(vii) Computer facility _____
(viii) Projectors (films, slides) _____
(ix) Others (specify) _____

(b) Use made of Services and Facilites: (indicate number)

(i) Pages of photocopies produced (from photocopiers/microform reader printers) _____
(ii) Microforms produced _____
(iii) Volumes bound in the bindery _____

(c) Other Services: (Delete as applicable)

(i) Do you catalogue books for other Libraries? Yes/No
If yes, state number of libraries.
(ii) Do you order books for other Libraries? Yes/No
If yes, state number of libraries.

8. Staff

	Full-Time	Part-Time
(a) Number of librarians (degree holders or equivalent)		
(b) Number of sub-Professionals (Diploma holders or equivalent)		
(c) Graduates training on the job		
(d) Non Library Professional Staff (specify)		
(i)		
(ii)		
(iii)		
(iv)		
(e) Library Assistants/Attendants		
(f) Other Supporting Staff		

9. Publications:

Lists of your publications indicating the year of first issue.

Questionnaire filled by

Name: _____

Status: _____

Date: _____

10. Please return the completed questionnaire to:

The Director,
National Library of Nigeria
Special Services Division,
4, Wesley Street,
P.M.B. 12626,
Lagos.

(for the attention of: Mr. R. A. Owolabi)

APPENDIX B

DEFINITION AND NOTES

INTRODUCTION

Regarding the information requested in the questionnaire it should be emphasized that many libraries have already been collecting such kinds of information for their records. However, the definitions and instructions relating to specific sections of the questionnaire are included to assist in achieving standardisation in the collection of statistics. It was noted that some sections or part of sections would not be applied to some libraries, such as school and special libraries. Since some special libraries operate under different conditions from others, each would have to complete parts that are applicable to itself and delete others. However, for schools which are more homogenous, it is recommended that they delete the following sections:

(a) - iii - ix

- annual edication under gifts and exchanges

- number of titles

(a) - number of referred

(b) - number of computations

In addition to the above explanations some discussion on each section of the questionnaire is included here for further clarification.

SECTION 1. LIBRARY PROFILE

The Library Profile as the name suggests should describe the library for the purpose of identification. Ten points in that section are of particular interest and comparison with special libraries are to be made, i.e., year of establishment, type of library and number of libraries in the system indicated by administrative unit branches and services.

Administration

Any independent library or group of libraries under a single director or single administration

Service Points

Where Libraries give full service to their users directly. The points at which library vans stop and extension services given are not counted as service.

Libraries are reckoned by number of administrative units and service points as follows:

(a) An 'independent library' without any branch services will be counted as follows:

(i) Administrative Units: 1

(ii) Service Points: 1

(b) An independent survey which pro ides a service for users in its own premises and in for other separate pre se will be counted as follows:

(i) Administrative Units: 1

(ii) Services Points: 5

(c) A group of libraries under a single director or a single administration which comprises three libraries and which does not provide a service for user in separate premises, will be counted as follows:

(i) Administrative Units: 1

(ii) Service Points: 3

(d) If the group of libraries mentioned in paragraph (c) above provides a service for users in its own premises and in four other separate premises, data should be entered as follows:

(i) Administrative Units: 1

(ii) Service points: 7

SECTION 2. LIBRARY BUDGET

The Budget gives the picture of financial resources available for various operations. Two kinds of expenditure are required - capital and recurrent. They can be used as a check on some items like materials acquired or staff employed to know if the resources were really utilized.

(i) Capital Expenditure:

Expenditure which results in acquisition of or addition to fixed assets, e.g., building sites, new buildings/extension, and equipment (including) initial book stock and furnishings for new and extended building.

(ii) Recurrent Expenditure:

Expenditure incurred in the day-to-day running of the library on an annual basis.

SECTION 3. PHYSICAL FACILITIES

This section on physical facilities should give an idea of space available therefore square metres are needed for floor space and linear metres for shelving.

This later measurement cay be obtained by keeping an account of the number of stacks and shelves on each stack and multiplying by the length of one shelf.

It has been suggested that a formula of about 40 or 45 volumes per metre could be agreed on to make this calculation easier. This whole section is closely connected with the next one on population served, since the facilities should be provided with the needs of library staff as well as potential users in mind. Seating, in particular in institutional libraries is calculated in relation to a certain proportion of those users.

(i) Net area of spaces assigned for library use, including reading areas, books, stacks and work area for staff.

(ii) Shelving Capacity:

Shelving capacity is measured by adding the length of all faced bookstock sections in metres.

SECTION 4. POPULATION SERVED

It should be noted that population served requires both potential and actual users. This should make institutions aware of the large number of non-users which could call for closer attention. Care should be taken to fill only the one of the three parts of that section that is applicable to the type of library.

(i) Library User:

Any person utilizing the services of the library 64

(ii) Registered Borrower

Any person registered with a library in order to borrow the materials of the collection for use outside the library.

SECTION 5. MATERIALS COLLECTION

Materials Collection refer to all kinds of materials provided for users in both book and non-book forms and acquired by purchase, gift or exchange. The linear metres are required here for book materials obtained by purchase. Some libraries, especially school libraries, may not have all the kinds of materials, but should fill whatever is available.

Regarding school libraries in order that they can complete the questionnaire as easily as possible, the section of relevance to them will be marked so that they can fill only those.

(i) Collection: All library materials provided by the library for its users as detailed in the questionnaire.

(ii) Preceding Year's Additions: All materials added to the collection, during the reporting year, whether by purchase, donation, exchange of materials or any other method.

(iii) Measurement of Collection in Linear Metres:

40 Books/Bound Volumes of Periodicals 2 - 1 metre

80 Unbound Volumes of Periodicals - 1 metre

(iv) Count microfilm by number of reels and other microforms by individual unit e.g., microfiche, etc.

(v) Title: (Book) A term used to describe/name a printed item which forms a separate whole, whether unit of any printed or manuscript work contained in one or several volumes.

(vi) Volume: (Book) A physical unit of any printed or manuscript work contained in the building or portfolio.

(vii) Periodicals:

(a) Definition: A Publication constituting one issue in continuous series under the same title published at a regular or irregular intervals over an indefinite period.
Individual issues in the series being numbered consecutively annually or each issue being dated. Newspapers as well as publications appearing annually or less frequently are included in the definition.

(b) Current Periodicals: These refer to periodical titles usually unbound, acquired on standing order subscriptions or regularly through gift, exchange or legal deposit during the reporting year.

(viii) Non-Book Materials:

(a) Audio-visual, library materials which required the use of special equipment to be viewed and/or heard. This includes materials such as microforms, phono-records, tapes, cassettes, motion pictures, slides, transparencies, video-recordings, etc.

(b) Other Non-Book Materials:

All materials other than books, periodicals, manuscripts, microforms and audio-visuals. This includes materials such as maps, charts, art-prints, photographs, etc.

SECTION 6. USER SERVICES

User Services include reference, circulation with reserved collection and inter-library loans. Under reference all means of enquiries are included whether a phone call a personal visit or a letter. For circulation the loan period and number of items borrowable per user are important if comparison is to be made between similar institutions.

SECTION 7. INTER-LIBRARY LOANS:

Loans of library materials made between one library and another not within the same administrative unit.

SECTION 8. EXTENSION SERVICES:

Services provided to other users outside the recognized service point e.g., house/ hospital bound service, prisons.

SECTION 9. SERVICES AND FACILITIES:

Among library facilities and services four items need a tick if they are available - bindery, printing press, photographic unit and computer facility. The other four may occur as one or more, therefore numbers need to be shown.

SECTION 10. STAFF:

The staff section requires all categories of staff although two items appear fairly open. One of them, the non-library professional would include posts like technician and secretarial staff while other supporting staff would refer to the remaining junior cadres, drivers, messengers and cleaners.

SECTION 11. PUBLICATIONS:

Publications should be self-explanatory. Items like the Annual Report are useful in giving a more detailed description if another library wanted to make a comparison with a similar institution.

APPENDIX C

RECOMMENDATIONS

The recommendation listed here is a compilation of those collected from all four workshops, and which are of national relevance. Those pertaining to the questionnaire itself have already been implemented where appropriate in the modification of the questionnaire. Some found to be wholly-in-house are not included since they will be adopted as required by the individual libraries.

1. Provide for a library statistics coordinator in each library who collates the statistics recorded in all sections of the library.

2. Have a procedure than ensures no gaps occur in the collection of statistics.

3. The supervisor in each library section should have the responsibility to remind the assistant at the specific times for recording statistics.

4. Actual records should be submitted to the supervisor at least once a month.

5. The assistants for this duty should be rotated to prevent boredom.

6. Arrange in-house training for assistants in order to emphsize the importance or recording statistics accurately. This could be part of a library's normal training programme although new assistants might need it at another period.

7. Closed access to Documents collections would necessitate the recording of use and therefore allow easier return and counting of items by various categories.

8. It was noted that microfiches being very flimsy items caused problems in counting individual fiche. Inspite of this, because of the additional problem of different numbers of fiches in an envelope relating to one item or title, it would be difficult to give a formula with a specific measurement for a number of fiches. It was therefore, agreed that the UNESCO instructions for counting each fiche should stand. To facilitate this, the count should be made at the time of acquisition and the number of fiches noted on each envelope and entered in the statistics like other materials acquired.

9. A set of sample forms for record-keeping should be collected for use by libraries especially those that do not yet have as organized system for collecting statistics. This will be done by the four zonal coordinators working in consultation with two groups, one for academic libraries and one for public. Special Libraries are so varied that they would have to choose which ever set could be applicable to them.

10. The statistics workshops should be repeated at the State level especially in the Sates outside those of zonal workshops. Public libraries felt that individual state library system could repeat the workshop just for their staff.